

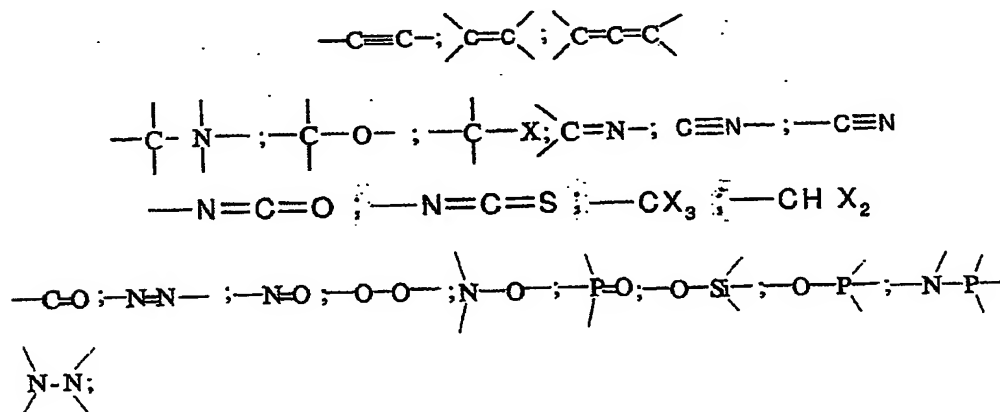
WHAT IS CLAIMED IS:

1. A method for selecting at least one catalyst from a library of catalysts for its reactivity with regard to a chemical conversion, characterized in that it comprises at least the stages consisting in:
- 5
- 10 a) testing the catalytic activity of a first catalyst belonging to said library of catalysts with regard to a reaction medium comprising, as compound to be converted, at least one reactivity probe having a specific or nonspecific labeling system and comprising at least one reaction unit capable of reacting according to said chemical conversion,
- 15 b) analyzing, on conclusion of said catalytic test, said reaction medium so as to qualitatively and/or quantitatively characterize the compounds formed,
- 20 c) repeating stages a) and b) for at least one other catalyst of said library,
- d) comparing the analytical results obtained for each catalyst so as to characterize at least one catalyst having the required reactivity with regard to said chemical conversion.
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2. The method as claimed in claim 1, characterized in that the reaction medium comprises at least two types of reactivity probe, each type of probe comprising at least one reaction unit capable of reacting with at least one unit present on the other type of probe according to said chemical conversion.
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3. A method for characterizing at least one catalytic application of a catalyst, characterized in that it comprises at least the stages consisting in:
- 35 a) testing the catalytic activity of a first

- 5 catalyst with regard to a reaction medium comprising, as compounds to be converted, a series of reactivity probes, each probe being different from one another and comprising at least one reaction unit capable of reacting with at least one other unit present on a separate or nonseparate probe,
- 10 b) analyzing, on conclusion of said catalytic test, said reaction medium so as to qualitatively and/or quantitatively characterize the compounds formed,
- c) repeating stages a) and b) for at least one other catalyst,
- 15 d) comparing the analytical results obtained for each catalyst so as to distinguish, from the common data, the data specific to each analysis carried out according to stage b),
- e) characterizing the compound or compounds corresponding to these specific data, and
- 20 f) qualifying and/or quantifying the catalytic reactivity of the corresponding catalyst or catalysts.
4. The method as claimed in claim 2 or 3, characterized in that each probe has a labeling system.
- 25 5. The method as claimed in claim 4, characterized in that each probe has a specific labeling system.
- 30 6. The method as claimed in any one of the preceding claims, characterized in that each probe has a single reaction unit.
- 35 7. The method as claimed in any one of the preceding claims, characterized in that a reaction unit is composed of a saturated bond of a carbon atom with at least one halogen atom and/or one heteroatom or an unsaturated bond between two carbon atoms, between a carbon atom and at least one heteroatom

or between two identical or different heteroatoms.

8. The method as claimed in any one of the preceding claims, characterized in that the reaction unit is
5 chosen from:



with X representing a halogen atom.

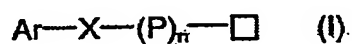
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9. The method as claimed in any one of claims 1 to 2 and 4 to 8, characterized in that the label has an electronic structure such that the probe-label system emits, when it is subjected to chemical or
15 photochemical ionization, a signal with an intensity at least 5 times greater than that emitted by the same probe not associated with said label.

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10. The method as claimed in claim 9, characterized in that the label comprises at least one aryl unit highly enriched in electrons.
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11. The method as claimed in claim 9 or 10, characterized in that said label is a compound of
25 general formula (I):



with:

- Ar representing a condensed or noncondensed

- aryl group which can comprise one or more heteroatoms chosen from nitrogen, oxygen and sulfur, it being possible for said group to be substituted by one or more halogen atoms, C₁-C₅ alkoxy groups and/or phenoxy groups,
- 5 - X representing a C₁-C₁₅ alkyl chain which can be interrupted by one or more oxygen atoms or ketone functional groups and which can, if appropriate, be substituted,
- 10 or derivative or analog of this,
- n representing 1 or 0,
- P representing a labile unit, such as, for example, an ester functional group, a benzyl bond or an Si-O bond, which provides for the bonding of said label of general formula (I) to
- 15 the reactivity probe, and
- □ representing the point of anchoring of the label to the reactivity probe.
- 20 12. The method as claimed in any one of claims 1 to 11, characterized in that the probe-labeling system combinations brought into contact are distinguished by their molecular weight.
- 25 13. The method as claimed in claim 12, characterized in that they carry the same labeling system.
14. The method as claimed in any one of the preceding claims, characterized in that the analysis in
- 30 stage b) is carried out by mass spectrometry.
15. The method as claimed in claim 14, characterized in that it involves the APPI technique.
- 35 16. The method as claimed in claim 14 or 15, characterized in that the mass spectrometer is coupled to a chromatography device.
17. A computer system of use in the implementation of

a method as claimed in any one of claims 1 to 16,
characterized in that it comprises at least one
computer server arranged for:

- 5 a) archiving, for each catalyst tested according
 to said method, the group of the data acquired
 during the analysis of the corresponding
 reaction medium,
- 10 b) comparing the data archived for the group of
 the catalysts tested for the purpose of
 characterizing specific catalytic reactivi-
 ties, and
- c) archiving the specific reactivities detected
 according to stage b).